



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,325	05/24/2006	Kai Schumacher	290909US0X PCT	5682
22850	7590	09/15/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER HAILEY, PATRICIA L	
			ART UNIT	PAPER NUMBER
			1793	
			NOTIFICATION DATE	DELIVERY MODE
			09/15/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No. 10/580,325	Applicant(s) SCHUMACHER ET AL.	
	Examiner PATRICIA L. HAILEY	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 16, 17, 19 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/24/06, 06/18/07</u> . | 6) <input type="checkbox"/> Other: _____ |

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-15 and 18, in the reply filed on July 31, 2008, is acknowledged. The traversal is on the ground(s) that no explanation of lack of unity between the inventions has been provided, and that the contribution of the invention as a whole has not been considered. This is not found persuasive because the Examiner has shown that, in view of the Zhang reference (U. S. Patent No. 7,217,407), the special technical feature of the claimed invention has been determined as lacking. Therefore, unity of invention is also lacking.

Further, Applicants' traversal "on the grounds that the Office has not applied the same standard of unity of invention as the International Preliminary Examination Authority" is noted, but is not persuasive. The fact that the Authority affirmed a unity of invention in the international application does not require the Office to affirm the same.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 16, 17, 19, and 20 are hereby withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected process for the production of a flame-hydrolytically produced titanium dioxide powder (claims 16 and 17), and to a nonelected sunscreen agents, catalyst, catalyst carrier, photocatalyst, and abrasive (claims 19 and 20), there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on July 31, 2008.

Claim Objections

3. *Claims 1-15 and 18 are objected to because of the following informalities:*

In claim 1, the formula for determining the half width HW should be:

$$\text{"HW [nm] = a x BET}^f \text{ where a = } 670 \times 10^{-9} \text{ m}^3/\text{g and}$$

$$\text{-1.3} \leq f \leq \text{-1.0".}$$

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the

various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. *Claims 1, 2, 7, 13-15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pratsinis et al. (U. S. Patent No. 5,698,177).*

Pratsinis et al. teach titanium dioxide powder synthesized by flame hydrolysis. See col. 6, line 33 to col. 7, line 38 of Pratsinis et al.

The titanium dioxide powder formed "generally will have a high anatase phase composition", but, depending on the reaction conditions (e.g., residence time in the reaction area), a titanium dioxide powder having a high rutile phase composition may also be formed. See col. 7, lines 39-64 of Pratsinis et al.

See also col. 9, line 59 to col. 10, line 6 of Pratsinis et al., which teaches that manipulation of the prior art's reaction conditions results in the formation of titanium dioxide powders "having a range of anatase phase compositions" of at least 80% anatase phase, and a specific surface area of at least 100 m²/gm, and up to about 200 m²/gm, as well as Table 2 of Pratsinis et al., which depicts exemplary titanium dioxide powders

exhibiting rutile and anatase contents and BET surface areas comparable to those recited in **claims 1, 2, 7, and 13**.

With respect to **claims 1 and 15**, Pratsinis et al. does not explicitly teach Applicants' claim limitation that the proportion of particles with a diameter more than 45 μm is within a range of from 0.0001 to 0.05 wt. %, nor does this reference explicitly teach Applicants' claim limitations regarding the half width and the compacted bulk density of the titanium dioxide powder. However, because Pratsinis et al. disclose surface areas that fall within the claimed range of 20 to 200 m^2/g , it would have been within the level of ordinary skill in the art to employ the surface areas disclosed in Pratsinis et al. in the formula recited in claim 1, and select values between -1.3 and -1.0 for the variable "f" to obtain half width values that would fall within the scope of Applicants' claim.

Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reasonably expect the titanium dioxide taught by Pratsinis et al. would exhibit a proportion of particles such as that recited in **claim 1**, and also a compacted bulk density comparable to that recited in **claim 15**, absent the showing of convincing evidence to the contrary, as this reference teaches a titanium dioxide exhibiting the properties of BET surface area and half width in values comparable to those respectively claimed.

A newly discovered property does not render a compound unobvious, if (1) the claimed compound is structurally obvious from a prior art compound, (2) the claimed

compound possesses the same property for which the prior art compounds were useful, and (3) the prior art compound in fact possesses the newly discovered property of the claimed compound. Monsanto Co. v. Rohm & Haas Co. (DC ED Pa 1970) 420 F2d 950, 164 U.S.P.Q 556.

It is well settled that when a claimed composition appears to be substantially the same as a composition disclosed in the prior art, the burden is properly upon the applicant to prove by way of tangible evidence that the prior art composition does not necessarily possess characteristics attributed to the CLAIMED composition. In re Spada, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Circ. 1990); In re Fitzgerald, 619 F.2d 67, 205 USPQ 594 (CCPA 1980); In re Swinehart, 439 F.2d 2109, 169 USPQ 226 (CCPA 1971).

With respect to **claim 14**, the titanium dioxide disclosed in Pratsinis et al. is considered to read upon the claimed chloride content. Although Patentees' titanium dioxide is not explicitly disclosed as having a chloride content, Applicants' claim limitation "of less than 0.1 wt. %" is considered to include zero percent.

With respect to **claim 18**, it is considered that because Pratsinis et al. disclose a titanium dioxide powder reading upon the instant claims, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reasonably expect the titanium dioxide of Pratsinis et al. to suitably function for the heat protection stabilization of silicones, absent the showing of convincing evidence to the contrary.

8. *Claims 1-12, 15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (U. S. Patent No. 7,217,407).*

Zhang teaches a titania powder (flame hydrolytically produced, see col. 3, line 57 to col. 4, line 5, line 8) having a surface area ranging from about 40 to about 150 m²/g, an average particle size in the less than 100 nm range, and a minor proportion of aggregates (formed from primary particles) above 100 nm in diameter, see col. 5, lines 15-27 of Zhang, wherein “minor proportion” indicates that 0 to 10 vol. % of the particles are above 100 nm. This disclosure is considered to read upon Applicants’ claim limitations regarding the BET surface area (**claims 1, 2, and 7**), the “proportion of particles with a diameter of more than 45 μm” (**claims 1 and 12**), and the “equivalent circular diameter” (**claims 4 and 9**).

With respect to **claim 1**, Zhang does not explicitly teach Applicants’ claim limitation regarding the half width of the titanium dioxide powder. However, because Zhang teaches surface areas that fall within the claimed range of 20 to 200 m²/g, it would have been within the level of ordinary skill in the art to employ the surface areas disclosed in Zhang in the formula recited in claim 1, and select values between -1.3 and -1.0 for the variable “f” to obtain half width values that would fall within the scope of Applicants’ claim.

With respect to **claims 3, 8, and 12** regarding the “90% spread of the number distribution...”, Zhang in Figure 1 depict a particle size distribution of Patentees’

titanium dioxide particles, the majority of which exhibits sizes less than 100 nm, and the remainder ranging from 100-10,000 nm.

With respect to **claims 5, 6, 10, and 11** regarding the mean aggregate area and mean aggregate circumference, one of ordinary skill in the art would readily deduce that the titanium dioxide particles of Zhang, which exhibit a particle size of less than 100 nm, would exhibit a circumference of $\pi \times \text{diameter}$ (less than 100 nm), or less than 314 nm, and a circumference of $\pi \times (\text{radius} = \text{diameter}/2)^2$ or $\pi \times (\text{less than } 100/2)^2$, or less than 7850 nm².

With respect to **claims 15 and 18**, it is considered that although Zhang does not explicitly disclose the property of compacted bulk density, or that Patentees' titanium dioxide is "for the heat protection stabilisation of silicones", it would have been obvious to one of ordinary skill in the art at the time the invention was made to reasonably expect that, absent the showing of convincing evidence to the contrary, the titanium dioxide powder of Zhang would exhibit a compacted bulk density comparable to that respectively claimed, and would also suitably function for the heat protection stabilization of silicones, as Zhang teaches a titanium dioxide powder reading upon that instantly claimed.

Priority

9. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Documents were filed on May 24, 2006.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICIA L. HAILEY whose telephone number is (571)272-1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICIA L. HAILEY/
Examiner, Art Unit 1793
September 10, 2008